IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

FORSLÖW

Serial No. 09/087,496

Filed: May 29, 1998

For: DYNAMIC QUALITY OF SERVICE RESERVATION IN A MOBILE COMMUNICATIONS NETWORK

Atty. Ref.: 2372-5

Group: 2663

Examiner: Toan D. Nguyen

March 22, 2002

Assistant Commissioner for Patents
Washington, DC 20231

REQUEST FOR RECONSIDERATION

Sir:

In response to the third, non-final Office Action in this case, dated January 28, 2002, Applicant respectfully requests reconsideration.

Applicant notes with appreciation the indication of allowable subject matter in claims 59-65, 76, 79, 103-109, and 117-118. Applicant also notes with appreciation the Examiner's withdrawal of the rejection of claims under 35 USC §112, second paragraph as well as the prior art rejection of claims based upon the Dupont patent.

The Examiner makes another prior art rejection based on the previously-applied Baugher reference. Claims 49-58, 66-75, 77-78, 80-102, 110-116, and 119-121 stand rejected under 35 USC §103(a) as being unpatentable over Baugher et al. (EP 0 632 672) in view of Scholefield et al. (WO 97/09836). This rejection is respectfully traversed.

Baugher describes a bandwidth reservation scheme for different traffic classes in a *fixed, wireline-type communications network*. See, for example, Figs. 1 and 2. Baugher concentrates on upper protocol layer services provided by a transport layer residing in a *fixed, wire-connected terminal*. Elements from a service channel having a higher priority, deadline, or period are transferred from an upper layer service channel to a next lower layer service channel before elements from a service channel having a lower priority, deadline, or period.

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In contrast to Baugher, the present invention provides dynamic quality of service reservation in the very different environment of a *mobile radio* communications system (as compared to a fixed, wireline communications system). In a mobile radio environment, plural mobile radio hosts share a same radio access network and a same pool of limited radio resources. The amount and quality of radio resources varies depending on changing signal strengths, varying packet size, fast and slow fading, changing path loss, shadowing, noise, interference from other radio transmitters, handover, and a host of other factors. Another aspect that is unique to mobile radio communications is *mobility*. In other words, the very fact that mobile terminals move at will, unpredictably attaching and detaching to various points in a radio communications system, presents significant problems to multimedia, packet radio communications that are not a concern in fixed networks. None of these problems is identified or addressed by Baugher where radio interface and mobility issues are not factors that require consideration.

Recognizing significant deficiencies in Baugher, as pointed out in Applicant's first response, the Examiner now applies a secondary reference to Scholefield which describes a wireless communications system. The Examiner contends that Scholefield is in "an analogous art" to that of Baugher. Applicant respectfully disagrees.

Scholefield is directed to an entirely different problem than what is addressed in Baugher. Scholefield addresses the problem that a new, higher priority user must wait until a lower priority user's current message/data transfer is complete before that higher priority user can get access to those communication resources, which in this case are TDMA timeslots. Scholefield is also concerned about the effect of fading on the use of multiple timeslots to increase throughput rate. Scholefield therefore allocates one or more subchannels based on priority of user data. If subsequent access requests are received with a higher priority message,

> completion of a lower priority message is deferred and the higher
> priority request allowed to proceed. Thus, an improved access
> procedure is provided that allows for quicker access time as the priority
> of the data traffic increases.

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Page 5, lines 14-18. Scholefield also fragments data packets and sends them on different timeslots (subchannels) because "the effect of the fragmenting and transmission on different subchannels is similar to that of interleaving the original data packet," thereby achieving "a more robust and higher throughput." Page 5, lines 21-24.

Baugher (wired and fixed) is not concerned about prioritizing access to resources based upon priority and deferring lower priority messages for subsequent higher priority messages. On the other hand, Scholefield (wireless and not fixed) is not concerned about requesting quality of service for different selected transmissions in a multimedia session. Indeed, there is no mention of multimedia sessions in Scholefield or an appreciation that different data flows in a multimedia session would have different quality of service needs. Baugher and Scholefield are not in analogous arts.

The Examiner relies on page 5, lines 26-28 of Scholefield which simply indicates that the wireless communications system has one or more mobile stations. Neither Baugher nor Scholefield disclose the capability provided by the present invention for reserving resources for a *wireless* packet radio session involving a mobile radio that includes *plural application flows*. An individual application flow corresponds to a stream of data packets that is distinguishable as being associated with a particular host application, e.g., an electronic mail message. Another example flow is a link to a particular Internet service provider to download a graphics file from a website. Both of these application flows may be part of a packet session established for a mobile radio terminal. Such a session may also be referred to as a multimedia session since more than one type of media is involved.

Scholefield is not concerned with multimedia sessions. Scholefield reserves a single quality of service (QoS) for a single data flow. A multimedia session with individual application flows is a more complicated situation. Rather than reserve a single quality of service for the packet session for all its individual application flows, the present invention permits definition of a different quality of service for each individual application flow in the session. The quality of service for each application flow in the packet session may be separately reserved, separately monitored, and/or separately regulated. Scholefield does not disclose a dynamic quality of service reservation mechanism for a mobile packet session. The present invention permits integration with other data service architectures such as the

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Internet and the fixed wireline communications network described by Baugher to provide an end-to-end integrated service where quality of service can be specified from the mobile radio all the way to a fixed, wireline host in an end-to-end communication.

Turning to independent claim 49, neither Baugher nor Scholefield disclose or suggest:

> establishing a packet session over the radio interface for the mobile radio including radio resources from the pool during which plural application flows are communicated with an external network entity, each application flow having a corresponding stream of packets.

Simply substituting Scholefield's plural mobile radios for the fixed terminals in Baugher does not result in a functional system. Where does Baugher or Scholefield describe how to handle multimedia mobile radio sessions? Where does Baugher or Scholefield teach establishing individual QoS for individual flows in a mobile radio session?

The only way to make the mobile subscriber units function in the Baugher system is to *modify* the Baugher system and Scholefield's mobile units in accordance with the teachings of the present application. Such a hindsight-based reconstruction of the invention is clearly not permitted under Federal Circuit case law. Indeed, the "mere fact that the prior art could be so *modified* would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (emphasis added).

The requirement that there be a proper motivation to modify references safeguards against the improper use of hindsight to find claims obvious. *In re Rouffet*, 149 F.3d 1350, 1359 (Fed. Cir. 1998). The Federal Circuit has emphasized the importance of a proper motivation to combine or modify in avoiding hindsight reconstruction of a claimed invention:

> our case law makes clear that the best defense against the subtle but power attraction of hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.

In re Dembiczak, 175 F.3d 994, 999 (Fed. Cir. 1999). It is well-established that the "motivation to combine [or modify] references cannot come from the invention itself."

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Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc., 21 F.3d 1068, 1072 (Fed. Cir. 1994).

Neither Baugher nor Scholefield appreciate the problems addressed and solved by the present invention, i.e., the problems with establishing a separate quality of service for each of multiple application flows over an unpredictable radio interface when the host is mobile and may have multiple points of attachment to the network. As the CCPA said long ago in *In re Sponnoble*, 160 USPQ 237, 243 (CCPA 1969):

> It should not be necessary for this Court to point out that a patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the "subject matter as a whole" which should always be considered in determining the obviousness of an invention under 35 USC §103 [cites omitted]. The Court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is, we must view the prior art without reading into the art appellant's teachings. [cites omitted] The issue, then, is whether the teachings of the prior art would, *in and of themselves* and *without the benefits of appellant's disclosure*, make the invention as a whole obvious.

Baugher and Scholefield are directed to different problems, and neither is directed to the problems addressed by the present invention.

Continuing in claim 49, neither Baugher nor Scholefield disclose the step of "determining whether *radio resources from the pool* are available to support the *quality of service parameters* defined for *each of the plural application flows.*" Lacking features required by claim 49 and a proper motivation (1) to make and (2) to modify the combination of Baugher and Scholefield, the rejection of claim 49 is improper and should be withdrawn.

Applicant also respectfully submits that features of claims that depend upon claim 49 are also not disclosed or suggested by the combination of Baugher and Scholefield. For example, claim 51 recites that "the quality of services defined for said each application flow at a network packet layer for an end-to-end communication from the mobile host and the external network entity." The Examiner relies on Baugher for this teaching. But Baugher fails to disclose an end-to-end communication that involves a *mobile host.* The quality of service for an end-to-end communication from a mobile host and a network entity involves

more sophisticated reservation techniques and coordination than for a fixed wireline network. Reserving and coordinating resources over a varying radio interface for a *moving* host is not a trivial task and is not considered or accommodated in Baugher's teachings.

Regarding claim 55, the Examiner contends that Baugher discloses storing subscription information for a mobile host referring to column 16, lines 13-19. Applicant has reviewed this text and finds no mention of a *mobile radio* host or subscription information. Similarly, the rejection of claims 56, 57, and 58 makes reference to particular sections in Baugher. However, a review of those sections makes no mention of a mobile radio terminal.

Independent claim 66 recites a mobile radio communications system with plural mobile radio hosts communicating with a radio network over a radio interface using radio resources from a pool of resources that may be allocated to the plural mobile radios -- none of which is disclosed by Baugher. Neither Baugher nor Scholefield discloses

> establishing a *packet session for the mobile radio* host over the radio interface using radio resources from the pool *during which plural application flows are communicated* between the mobile host and an external network entity, each application flow having a corresponding stream of packets.

Regarding the step "making a reservation request for a particular quality of service for an individual application flow associated with the packet session," the Examiner refers to Baugher's text at column 3, lines 43-47. While this text refers to requesting transmission of data elements including a "specification of a predetermined quality of service for transmission," there is no teaching that such a reservation request is made for each of plural application flows in a multimedia packet session involving a mobile radio host over a radio interface using radio resources.

Contrary to the Examiner's contention, Baugher fails to disclose

> establishing a logical bearer between the mobile radio host and the gateway to bear plural ones of the individual application flows having different corresponding quality of services.

The Examiner refers to column 12, lines 37-54. Multiplexing data elements with different quality of service needs on a "same single session 108" does not teach a logical bearer between a mobile radio host and a gateway node.

Accordingly, the rejection of claim 66 based on Baugher and Scholefield is improper and should be withdrawn. Similarly, dependent claim features are not disclosed or suggested. For example, claims 67-69 relate in some way to certain aspects of the mobile radio host. The references made to Baugher for these claims do not disclose a mobile radio host.

Turning to claims 77 and 115, Baugher fails to disclose or suggest a mobile radio communication system that has plural mobile radio hosts communicating with a radio network over a radio interface using radio resources from a pool that may be allocated to the plural mobile radio hosts. Neither Baugher nor Scholefield disclose

> establishing a packet session over the radio interface for a mobile radio host using radio resources from the pool during which plural application flows are communicated with an external network entity, each application flow having a corresponding stream of packets.

Nor is there disclosure of "the serving node *merging packets from different sessions with the same quality of service destined for different mobile radio hosts within a same geographical service area.*" The Examiner refers to Fig. 5 in Baugher, as well as column 12, lines 37-39. Fig. 5 simply shows two fixed terminals connected by a single wire 108. There are no mobile radio hosts, different geographical service areas, or even different sessions. Only a single session is shown in Fig. 5 between two fixed, wire-connected terminals. This is confirmed by the description at column 12, lines 37-39. There simply is no teaching of merging packets from different sessions either in a wireline context or in a wireless, mobile radio context.

Regarding independent claim 80, Baugher fails to disclose a mobile radio communications system including a mobile radio network, plural mobile radio terminals, a radio interface, and radio resources. Neither Baugher nor Scholefield disclose a *mobile radio terminal* that is

> configured to establish a data packet communications session over the radio interface using radio resources from the pool during which two application flows, corresponding to two data packet applications,

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communicate during the session two data packet streams
corresponding to the two data packet applications with another entity
in an external network.

Baugher does not show any mobile radio terminal. None of the mobile radio terminals in
Scholefield is configured as claimed. Indeed, all of the mobile terminals described in
Scholefield are configured to communicate data packets from one data packet application at
a time. The mobile radio terminals in Scholefield are not configured for multimedia
sessions. Accordingly, both references also fail to disclose or suggest:

- a radio packet network coupled between one mobile radio terminal
  and the external network entity for reserving a different quality of
  service class for each of the two data packet streams associated with
  the mobile radio terminal during the session

- wherein radio communication resources from the pool are
  reservable to support the two data packet streams with different
  quality of service classes.

Thus, many features of the independent claims are completely absent from the combined
teachings of Baugher and Scholefield. In addition, many of the features recited in claims
that depend from claim 80 are also not disclosed.

Turning to independent claim 95, Baugher fails to disclose a mobile radio terminal.
Neither Baugher nor Scholefield disclose a *mobile radio terminal* that includes

a *reservation controller* configured to reserve a different quality of service
for different ones of plural data packet streams associated with
corresponding applications operating at the mobile radio terminal and
established during a data session when the mobile radio terminal is
attached to the radio packet network.

The Examiner has not pointed to any reservation controller in a mobile radio terminal in
Scholefield. The Examiner refers to Fig. 2 and column 6, line 56 to column 7, line 34 in
Baugher for allegedly teaching this reservation controller. But Baugher does not disclose a
mobile radio terminal. Fig. 2 simply depicts a fixed, wireline configuration for a network.
Furthermore, there is no teaching in Baugher or Scholefield of the reservation controller in
the mobile terminal requesting "from the radio network, reservation of radio resources from

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the pool to support the different quality of services defined for the different data packet streams."

Turning to independent claim 97, the Examiner fails to identify where Baugher or Scholefield disclose the claimed radio packet network node. Indeed, there is no radio network described in Baugher. Nor is there a radio network node in Scholefield that is configured to establish a packet session over the radio interface for a mobile radio terminal
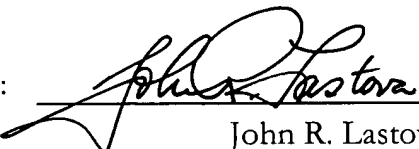
> using radio resources from the pool during which plural application flows are communicated with an external network entity, each application flow having a corresponding stream of packets.

Scholefield does not describe establishing a packet session over a radio interface with plural application flows. Thus, it follows that the remaining tasks performed by the radio packet network node defined in claim 97 are also not disclosed or suggested by Baugher or Scholefield. For similar reasons, (although different tasks are recited), neither Baugher nor Scholefield disclose the radio packet network node recited in claim 110.

For the reasons set forth above, Applicant respectfully submits that the present application is now in condition for allowance. An early notice to that effect is earnestly solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____

John R. Lastova
Reg. No. 33,149

JRL:mm
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

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